By: Matthew Fredo, Adam Olson, Noah Kantor, Julian Robles, and Lucas Wilson-Wuestefeld
Advisors: Geoffrey Pfeifer and Derren Rosbach

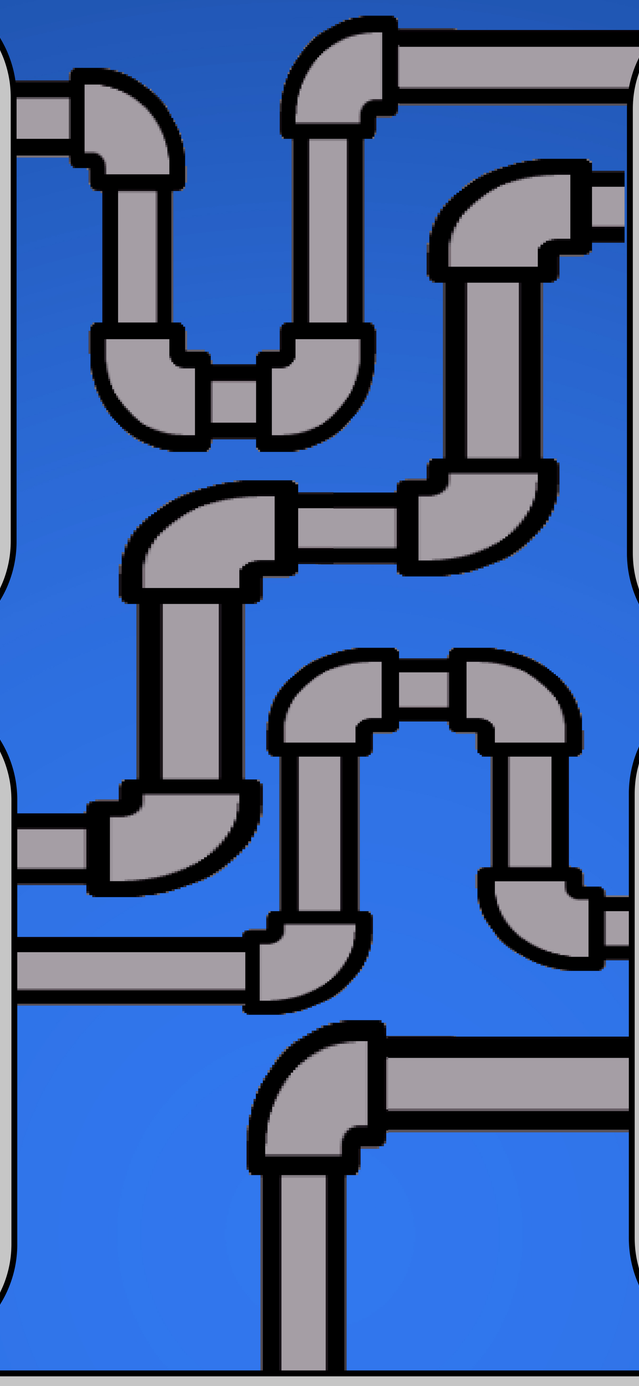
WPI

Combined Sewage Overflows in New York City

Clean Marine

Problem:

- NYC's combined sewer systems overflow and leak raw sewage into the surrounding waterways



Causes:

- NYC has 72% impervious land
- Rainwater causes untreated rain or sewer water spills into rivers and oceans around the city after the combined sewers meet capacity

Impacts:

- Dumps sewage and polluted water into local waterways
- Linked to water quality issues such as biodiversity loss

Approach:

- Conducted Research on CSOs in NYC to find why it is a problem
- Methods of solution were discovered
- Developed a combined solution

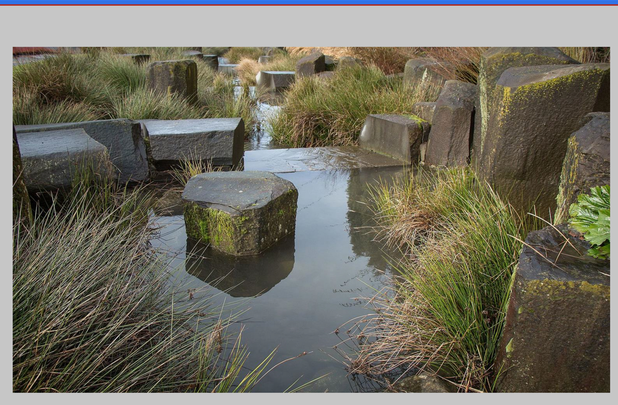
Green Infrastructure Solutions:

Each of the following solutions can be proposed as new policies for new infrastructure

Green Roofs

Impact on CSOs

- Delays the time that runoff occurs
- Slows the velocity of direct runoff
- Moderates the temperature of the runoff, improving water quality for marine life



Rain Gardens

Impacts on CSOs

- Collects, filters, and slowly disperses a large amount of runoff that would otherwise directly enter the sewer system
- Reduces runoff and flooding

Porous Pavements

Impacts on CSOs

- Reduces stormwater volume
- Reduces the flow of rainwater to the storm sewer

Incentive Programs:

- People will gain rewards or benefit for implementing green infrastructure on their private property

References: [Digital Image]. (2017). Retrieved from https:https://commons.wikimedia.org/wiki/File:Rain_Garden_(32851238970).jpg [Digital Image]. (2016). Retrieved from https://www.jba.af.mil/News/Article-Display/Article/947201/secret-gardens-save-af-money/

[Digital Image]. (2011). Retrieved from https://commons.wikimedia.org/wiki/File:Permeable_paver_demonstration.jpg. LTCP Frequently Asked Questions. (n.d.). Retrieved from http://www.nyc.gov/html/dep/pdf/cso_long_term_control_plan/ltcp_faqs_handout.pdf.